POWERTECH (USA) INC.

December 9, 2019

Valois Robinson
U. S. Environmental Protection Agency Region 8
Underground Injection Control Program
Mail Code: 8WD-SDU
1595 Wynkoop Street
Denver, CO 80202-1129

Re: Powertech (USA) Inc. Comments on Dewey-Burdock Project Revised Draft Class V Area Permit

Dear Valois:

This letter and enclosure represent Powertech (USA) Inc.'s (Powertech's) written comments on the Draft Class V Area Permit for the Dewey-Burdock Project issued for public comment on August 26, 2019 ("Revised Draft Class V Permit"). The written comments pertain to the Draft Class V Area Permit and Draft Class V Area Permit Fact Sheet. Table 1 includes our specific technical comments.

Powertech incorporates its June 16, 2017 letter to the EPA (the "Original EPA Letter") by reference with this submission. This letter often references comments from Powertech's Original EPA Letter. In the table below, Powertech has included comments from the Original EPA Letter that Powertech believes have not been fully addressed by the EPA. Powertech has also provided new comments based on its review of the Revised Draft Class V Permit.

Powertech appreciates the opportunity to provide these comments on the Revised Draft Class V Permit and would be happy to discuss them further with the EPA.

Sincerely,

John Mays
Chief Operating Officer
Powertech (USA) Inc.

Enclosure:
Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions

5200 DTC Parkway, Suite 280
Greenwood Village, CO 80111 USA
Telephone: 303-790-7528
Website: www.azargauranium.com
Email: info@powertechuranium.com

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions

No.	Draft Permit		Fact Sheet			Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section	Type	
3	4 14	II.A.1 II.I	34	5.3.4.1	R	**Comment:** Part II of the Revised Draft Class V Permit presents a regulatory process to obtain a Limited Authorization to Inject (LAI). **Requested Change:** Powertech is not aware that a LAI is an established regulatory process, or is warranted in any way, for the proposed operation. Powertech is not aware that EPA Region 8 has included a LAI requirement for any Class V, Class I, or Class III permit and requests clarification as to why this permit requirement is necessary to protect USDWs, or, absent such clarification, Powertech requests removal of the LAI requirement. The testing procedures that are included under the LAI are routinely done in many similar well permits without a separate authorization, lack any significant potential for contamination of USDWs and are done with well casing in place. Powertech requests moving the Part II, Section A.1 requirements in entirety to Section A.2 (Information to Submit to the Director to Obtain an Authorization to Commence Injection). Further, from an operational standpoint, with the LAI process approval turnaround, drilling operations and equipment will be on standby until the EPA grants the LAI, which will cost Powertech significant resources for no additional protections. The LAI is mentioned in multiple places throughout the Revised Draft Class V Permit and in the Revised Draft Class V Fact Sheet, as Powertech commented in its Original EPA Letter and these comments still apply; however, for brevity, they are not repeated below.
5	6	II.C Table 4				**Comment:** The Revised Draft Class V Permit states a "Fracture Finder" log will be run. Fracture Finder has different connotations to different people. To clarify, a micro-resistivity log would be an acceptable fracture finder log. A micro-resistivity log uses the same general principals as a normal resistivity (wireline) log, except it is a pad tool with small spacing that allows for very detailed evaluation of the wellbore face and the first 1-3 inches of the formation. It is useful to differentiate between wall cake from drilling mud, filtrate from drilling mud that has invaded the formation, and the formation fluid. It is also useful to identify zones that have significant fluid invasion (such as natural fracture intervals). For this reason, a micro-resistivity log is often referred to as a Fracture Finder log. **Requested Change:** Add "(Micro-Resistivity)" after "Fracture Finder" in Table 4.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
9	7-9	II.D Tables 6 and 7 II.D.2.b-h	33	Table 12	R, A, E	**Comments**: Total Dissolved Solids (TDS) results for samples collected from cased and perforated intervals will inform EPA's authorization to inject and open-hole logs will be used by Powertech to assess formation characteristics and establish perforation intervals. Collecting open-hole samples is therefore not a vital component of well construction and therefore should not be required by the permit. Furthermore, where uncased hole stability presents a risk of hole collapse, collecting open-hole samples may not be achievable. Powertech intends to collect a single cased-hole sample from each injection well unless a confining layer is present between perforated zones where upon samples will be collected from each injection interval isolated by a confining layer. **Requested Changes:** Powertech requests requirements for open-hole aquifer fluid sampling be removed from the permit. In the event open-hole sampling requirements cannot be removed from the permit, Powertech requests the wording be changed to indicate open-hole samples "can be collected at Powertech's discretion" or "will be collected if practical," or similar, to provide for the possibility that open-hole sampling may not be achievable. Powertech requests "each discreet Minnelusa perforated interval" in Table 6 of the draft permit and "each Minnelusa injection interval" in Table 12 of the draft fact sheet be defined to mean each perforated zone in the Minnelusa Formation separated by a confining layer. The intent of this definition is to allow a single sample to be collected from across perforated intervals in each injection well in the absence of a confining layer between perforated intervals.
10	8	II.D.2.a	32	5.3.1	R, A	**Comment:** A fluorescent dye tracer is being required to differentiate between drilling mud and formation fluid. Powertech is concerned that maintaining sufficient dye in the system for detection may not be possible. **Requested Change:** Powertech requests the following be added at the end of II.D.2.a. to address the case where sufficient dye for detection cannot be maintained in the system: "In the event that the dye dissipates in the drilling mud or formation fluid to the extent that it is not detectable during sampling, it is understood that stabilized field parameters will be relied upon to establish the presence of native formation fluid in a given sample."

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
12	7 12	II.D Table 7 II.E.3.b.i II.F.2.a	30	4.4.4	C	**Comment:** Powertech repeats its concern that since the Revised Draft Class V Permit duration is 10 years, it would be appropriate to model the drawdown in the Madison aquifer for 10 years rather than 12 years as currently required. A shorter duration for drawdown modeling is also warranted because the drawdown in the Madison is expected to be minimal with little change over time (Exhibit 001 at 9-10). Similarly, it would be more appropriate to calculate the injection zone formation pressures resulting from 10 years of injection activity rather than 12 years.
14	9 9 30	II.D Table 8 II.D.2.g V.D.2.a.i Table 16	34	Table 13	I, C	**Comments:** a. Are analyses for metals and radionuclides total or dissolved fractions? b. Why are the analytical methods different from those listed in the Revised Draft Class III Permit (e.g., alkalinity, bicarbonate, sulfate, etc. have different methods in Table 8 of the Revised Draft Class III Permit)? c. What would be the process for obtaining approval of alternate analytical methods for cased-hole samples? **Requested Changes:** a. In Tables 8 and 16, metals and radionuclide samples should be analyzed for dissolved fractions to provide analytical results that represent the soluble (mobile) metals rather than suspended (particulate) metals. Dissolved analyses generally are preferred for most RCRA, CERCLA, and SDWA programs and are consistent with permit requirements for UIC wells in other EPA regions and states. This would also be consistent with NRC requirements under the approved license, SUA-1600, for the Dewey-Burdock Project. b. In Table 8, Powertech requests that analytical methods be changed to be consistent with the Final Class III Permit, Table 8, which should reflect Powertech's comments for the Revised Draft Class III Permit on Table 8. This would also make the laboratory analytical methods consistent with NRC license requirements (specifically with Table 6.1-1 of the approved NRC license application). This will bring a consistency for data collected across the project. Further, Powertech requests that total analysis may be left as an alternative method if needed. c. Powertech requests II.D.2.g. second asterisk on page 9 regarding cased-hole samples be modified by adding the sentence, "Equivalent analytical methods may be used after prior approval by the Director" at the end to address the process for obtaining approval for alternate analytical methods for cased-hole samples.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
16	12	II.F.2.c	26, 30	4.4.2.1 Table 9	I, R	**Comment:** Powertech repeats its concern that there is no evidence whatsoever that (a) oil/gas wells or (b) the Dewey Fault are potential conduits for flow from the Minnelusa injection zone to the first overlying aquifer. This characterization is supported by the permit application and the South Dakota DENR Report to the Chief Engineer on Water Permit Application No. 2685-2 (Exhibit 001 at 9, paragraph 1). See Comment #16 in the Original EPA Letter.
17	13	II.F.3.a	28	Sec. 4.4.2.2	R, C	**Comment:** There is no explanation or evidence for the 1,000-foot offset restriction around the pre-existing offset area surrounding plugged oil and gas wells. Powertech has already (conservatively) requested an offset from those wells, even though plugging records clearly indicate that wells are property plugged. There is no basis for EPA to add another 1,000 feet to the offset requested in the permit application. Because of records to the contrary, the Earl Darrow #1 well does not serve as a potential conduit for flow, and there are no other oil and gas test wells penetrating the Minnelusa or deeper in the project area. See Comment #17 in the Original EPA Letter.
18/21	Various	Various	---	---	I	**Requested Change:** For consistency with regulatory requirements and for internal consistency, Powertech requests references to EPA or EPA Region 8 be changed to "the Director" wherever reference is being made to EPA in its role as UIC program Director. Some, but not all instances of this were updated in the Revised Draft Class V Permit.
22	15	II.J Table 10	35	Table 14	I, C	**Comment:** The permit requirement limits Part II MIT logging to Radioactive Tracer (RAT) logs. Few vendors run RAT logs, and it may be difficult for those vendors to get a license to bring RAT tools into South Dakota. Temperature logs should also be considered. **Requested Change:** EPA Guidance No. 37 indicates that Part II MIT may be demonstrated by cement bond log showing 80% bond through an appropriate interval, or radioactive tracer survey, or temperature survey. Further, 40 CFR § 146.8 (general UIC) clearly indicates that a temperature log alone may be used. It states that other or alternate tests may be allowed by the Director/Administrator or may be required if the results are unsatisfactory. Powertech is committed to running a cement bond log and a temperature log to demonstrate Part II MIT. This process is commonly used on Class I wells in EPA Region 8 pursuant to 40 CFR § 146.14(b). Powertech requests the following change to provide flexibility in the event that RAT tools cannot be located.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

<table>
<tr><th rowspan="2">No.</th><th colspan="2">Draft Permit</th><th colspan="2">Fact Sheet</th><th rowspan="2">Type</th><th rowspan="2">Comment and Recommended Permit Language Revision or Other Modification</th></tr>
<tr><th>Page</th><th>Section</th><th>Page</th><th>Section</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>Table 10. Formation Testing Involving Injection
<table>
<tr><td>TYPE OF TEST</td><td>PURPOSE</td></tr>
<tr><td>Step Rate Test</td><td>Initial test to determine site specific fracture gradient pressure to use calculating MAIP permit for each well. Injection pressures shall be monitored at surface and bottom hole to determine friction loss for each well.</td></tr>
<tr><td>Initial Radioactive Tracer Survey or Temperature Log</td><td>Baseline assessment of ability of the cement behind the longstring casing to prevent movement of injected fluids out of the approved injection formation.</td></tr>
</table></td></tr>
<tr><td>25</td><td>20</td><td>III.D</td><td>---</td><td>---</td><td>I,C</td><td>Comment:
Powertech requests removing Sections III.D.4.c and III.D.5, since field conditions will dictate cement volumes and casing centralizer spacing. It is inappropriate for the EPA to specify these construction requirements, since Powertech will demonstrate Part II MIT in accordance with the permit and UIC regulations.
Requested Change:
4. The Permittee shall use cement:
a. Of sufficient quantity and quality to withstand the maximum operating pressure; and
b. Which is resistant to deterioration from formation and injection fluids~~; and~~
~~c. In a quantity no less than 120% of the calculated volume necessary to cement off a zone.~~
~~5. A float shoe shall be used with a float collar one or two joints up from the bottom of the casing and centralizers shall be placed at a minimum of one on every fifth casing joint.~~</td></tr>
<tr><td>28</td><td>22
24</td><td>III.L.2
IV.F.3</td><td>43</td><td>7.3</td><td>I, C</td><td>Comment:
The draft permit states certain minor modifications, such as adding perforations within the already approved injection zone, would be major modifications. This appears to be inconsistent with 40 CFR 144.39, which states, “If a permit modification satisfies the criteria in § 144.41 for “minor modifications” the permit may be modified without a draft permit or public review.” § 144.41 allows the Director to change construction requirements pursuant to § 144.52(a)(1) provided that any such alteration complies with the requirements of part 144 and part 146. § 144.52(a)(1) stipulates that “changes in construction plans during construction” may be approved as minor modifications provided that no such changes may be physically incorporated into construction of the well prior to approval of the modification by</td></tr>
</table>

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
						the Director. Powertech interprets this to mean that perforating in the approved injection zone constitutes a "change in construction plans during construction" because adding perforations in the already approved injection zone is a continuance of well construction within the approved well construction plans. Powertech therefore proposes that the addition of perforations in the approved injection zone should either not require additional approval or should be approved as a minor modification rather than requiring a major modification of the permit. It is common for many UIC well classes that perforations are added within the approved injection zone due to physical plugging, friction loss, or additional porosity discovered through data analysis. In all of these examples, additional perforations would help inject more fluid at a lower injection pressure but would not affect fluid containment described in the permit application or specified in the Permit. Also, there is no requirement in 40 CFR 144 or 146 to conduct MIT after adding additional perforations assuming the packer and tubing are not removed. If tubing and packer were removed to add perforations, Part I MIT would be necessary once the tubing and packer were replaced. **Requested Change:** Powertech repeats its request for the following changes. **III.L. Workovers and Alterations** 4. Any modification to well construction that is substantially different from the approved well construction plan is allowed only as a major modification of this Area Permit according to 40 CFR § 144.39 and § 124.5. **IV.F. Approved Injection Zone and Perforations** 3. Additional injection perforations may be added once the following requirements are met: a. The new perforations remain within the approved injection zone, b. The top perforation is no higher than the approved top of the injection zone ~~c. The Permittee has received approval from the Director as a major modification of this Permit in accordance with Part III, Section C.2 of this Permit; and~~ ~~d. The Director approves the addition of perforations as a major modification of this Area Permit according to 40 CFR § 144.39 and § 124.5.~~ c.~~e.~~ After the addition of perforations, the Permittee shall follow the requirements for well Workovers and Alterations under Part III, Section L if the tubing and packer are removed to add the perforations.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
29	25	IV.K.1	47	7.8	I, C	**Comment:** Powertech repeats its concern that there are several waste streams identified in the Waste Analysis Plan included with the permit application that are not included in the list of waste fluids in the draft permit (e.g., restoration bleed [whether or not it is processed through RO], yellowcake wash water, bleed from effluent and precipitation circuits, sumps, membrane cleaning solutions, groundwater sweep solutions, and plant washdown water). **Requested Change:** Powertech requests adding the waste streams above, which were included in the permit application, to the permit text. All fall into the category of waste fluids generated by the ISR process, which is already described in the draft permit. Requested changes are provided below. **IV.K. Approved Injectate** 1. Injection fluid is limited to waste fluids from the ISR process generated by the Dewey-Burdock Project. These waste fluids include groundwater produced from well construction, laboratory waste fluids, well field production bleed, ~~and~~ concentrated brine generated from the reverse osmosis treatment of groundwater produced from wellfield during groundwater restoration, restoration bleed not processed by reverse osmosis, yellowcake wash water, bleed from effluent and precipitation circuits, sumps, membrane cleaning solutions, groundwater sweep solutions, and plant washdown water. The groundwater pumped from any portion of the Inyan Kara aquifers for the purpose of remediating an excursion is also approved for injection into the Class V injection wells.
30	26 31-32	V.B., V.B.1 Tables 17A and 17F	53	8.1.2.2	I, C	**Requested Change:** See Comment #30 from the Original EPA Letter. Powertech requests that the 4.0 magnitude requirement in the fact sheet and in the second paragraph of V.B. and in V.B.1. of the Revised Draft Class V Permit be changed to a 4.5 magnitude. In addition, for consistency with V.B.4, Powertech requests a 2.0 magnitude be specified in Tables 17A and 17B as shown below. **Table 17. Monitoring, Recording and Reporting Requirements for Well Operating Parameters** A. CONTINUOUS MONITORING MONITOR: Seismic events with greater than 2.0 magnitude (MMI scale) within a two (2) mile radius of the Area Permit boundary, gathered from USGS Earthquake Hazard Program website or through personal communication.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
						Table 17. Monitoring, Recording and Reporting Requirements for Well Operating Parameters F. QUARTERLY MONITORING REPORT: Summary of monthly reviews of seismic events with greater than 2.0 magnitude (MMI scale) within a fifty (50) mile radius of the Area Permit boundary.
33	28-29	V.D.1.d., V.D.1.h., V.D.1.i Table 14	---	---	I, R, C	**Comments:** Powertech notes Table 14 is no longer needed or referenced in the permit because stabilization requirements are stated in II.D.2.g. In addition, Powertech restates its request for modifying Part V, Sections D.1.d, h and i for flexibility as shown below. **Requested Changes:** Powertech requests Table 14 be removed from the permit because it is no longer needed and that the following revisions be made to Part V, Section D.1.d., D.1.h. and D.1.i. **V.D. Monitoring Methods, Parameters and Frequency** **1. Monitoring Methods** d. Injection pressure, annulus pressure, injection rate, and cumulative injected volumes shall be observed and recorded under normal operating conditions, and all parameters shall be observed ~~simultaneously~~ at the same general time to provide a clear depiction of well operation. h. Fluid volumes are to be measured in standard oilfield barrels (bbl) or gallons (gal). i. Fluid rates are to be measured in barrels per day (bbl/day) or gallons per minute (gpm).
34	33	V.E.2	56	8.2	I, E	**Comment:** Powertech repeats it uncertainty regarding why 40 CFR part 146 subpart G regulations are referenced as those regulations refer to Class I hazardous waste injection wells. **Requested Change:** Please explain the basis for reference to 40 CFR part 146 subpart G, which pertains to Class I hazardous waste injection wells. This permit is not for a Class I hazardous waste injection well; permit conditions prohibit injection of hazardous waste.
35	34-35	V.G	42 55	6.5, 8.1.5	I, C	**Comment:** Powertech will operate a manned facility. Why are there automated monitoring and shut-off requirements that would apply whether the facility is manned or unmanned? In addition, the

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
						monitoring requirements in Part V, Section G.6.h through k apply regardless of manned or remote operations. **Requested Change:** Powertech requests the addition of a qualifier to indicate that automatic monitoring guidelines must be followed only if the facility is unmanned. In addition, Powertech suggests moving the requirements in Part V, Section G.6.h through k to Part V, Section D.4 (Page 33).
39	43-44	VIII.C	58	10.2, 10.3	I, A	**Comment:** Powertech notes there are no other ISR projects in Region 8 where financial responsibility has been required to be posted prior to issuance of the final permit; instead, in these other cases, demonstration of financial responsibility has been required after permit issuance but prior to construction. Powertech notes that these new requirements are not standard to other uranium ISR projects in Region 8 and are not required by regulation. Please refer to Comment #59 of this letter.
						Fact Sheet Only
52	---	---	4, 8	1.0, 2.1	I, R	**Comment:** Powertech restates its concern that waste generated on site will be 11e.(2) byproduct material regulated by NRC, not hazardous waste according to RCRA. The references stating that Powertech will treat fluid to below hazardous standards implies that hazardous fluid exists on site. Language in the draft permit already prohibits injection of hazardous waste into the Class V wells. **Requested Change:** Powertech requests removal of the repeated references that characterize site waste as hazardous because this is not accurate; it is 11e.(2) byproduct material. This comment also applies to similar statements on page 1 and elsewhere in the Draft Cumulative Effects Analysis.
53	---	---	23-29	4.4.1 4.4.2 4.4.2.1 4.4.2.2 4.4.3	R, C, A	**Comment:** Powertech repeats its comment that assignment of 10% porosity to the Minnelusa based on Greene (1993) data is incorrect and leads to a greatly exaggerated and inaccurate Radius of Fluid Displacement (ROFD) calculation. Please refer to comment #53 in the Original Draft Permit for data that show the average density porosity is 19% in the Minnelusa in the project area.
55	---	---	23 28	4.4.1 4.4.2.2 5.4	R, C, A	**Comment:** Powertech repeats its concern that the Critical Pressure Rise calculations performed by EPA are incorrect and that the Cone of Influence (COI) data for Minnelusa-Madison are incorrect.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
			36-37			EPA interpreted Figure D-10 from the Class V permit application to indicate that the potentiometric surface of the Madison is at ground surface (Dewey Area) and 15 feet below ground surface (Burdock Area). As noted in the application (pp. 2-4 & 2-5), this map was based on little (if any) local data. In fact, it shows the contours approaching the project area are "inferred". Powertech used local data from the City of Edgemont wells to estimate the potentiometric surface of the Madison to be approximately 200 feet above ground surface, an estimate which is reasonable. The critical pressure rise was properly calculated on this basis in Tables 1 and 2 of the Class V permit application. It is noted that data now available for the closest state Madison observation well at Hell Canyon and shown in page 20 of the fact sheet, located approximately 9 miles away on the northwest side of the Dewey Fault, if extrapolated to the project area, indicate that the potentiometric surface of the Madison would be at least 50 to 100 feet above ground surface. Further, as previously noted, EPA incorrectly used maximum drawdown at the pumping well from the South Dakota DENR Report to the Chief Engineer on Water Permit Application No. 2685-2 (86.8 feet at Madison well at pumping rate of 551 gpm; Exhibit 001) and subtracted that depth from ground surface. Using this extreme scenario (which is 3.4 times the maximum rate needed by Powertech if Class V wells are drilled), the calculated drawdown at locations 1,000 feet distant from the pumping well is less than 35 feet after 20 years of continuous pumping at 551 gpm. In addition, as noted in the report, the calculation uses a transmissivity of 3,000 ft^2/d, which is likely low for the area. It states that other local data indicate transmissivity values for the Madison as high as 7,393 ft^2/d; therefore, drawdown could be even less. The report states that 551 gpm produced from the Madison is maximum usage rate in the event that Class V wells were not used for disposal. It goes on to state that the use of disposal wells would reduce the need for Madison fluid to approximately 160 gpm. In either case, the report states that Madison drawdown would not be significant or impact the area. The report notes that drawdown measured in wells near high capacity municipal wells in Spearfish, Sturgis and Rapid City has been only a few feet or tens of feet. Powertech notes that the seven high capacity wells in the Spearfish area that are documented by the state produce 500-2,200 gpm per well or 6,980 gpm in total (South Dakota DENR December 2013 evaluation of Spearfish public water system, Exhibit 007 at 4).

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
56	---	---	31	Sec. 4.5	R	**Comment:** Powertech remains concerned about the way EPA states that Class I standards were applied "due to the nature of the activity." Water will be treated to below 10 CFR Part 20 standards for release of radionuclides to the environment such that it cannot be classified as hazardous or radioactive material due to the permit conditions. Indeed, by regulation, the injectate should be classified as 11e.(2) byproduct material. **Request:** Powertech requests explanation of the "nature of activity" and regulatory basis for the statement and application of Class I standards or removal of such references. Powertech requests that statements describing the injectate be classified appropriately as "byproduct material."
57	---	---	31 32	5.1 Table 11	R	**Comment:** In Section 5.1, EPA explains the permeability and hydraulic conductivity values of the overlying confining layers that the EPA will consider adequate are on the scale of those found in Table 11. Powertech suggests confinement will be demonstrated also based on water quality and potentiometric surface data and not on permeability and hydraulic conductivity alone. Clarification regarding the process for determining adequacy of the permeability and hydraulic conductivity of the overlaying confining zone are not within the scale of those shown in Table 11. **Requested Change:** Powertech requests clarification regarding the process to be used if confining values are outside of the scale of those shown in Table 11.
58	---	---	---	---	C	**General Comment:** Powertech repeats its concern that calculations by EPA for Critical Pressure Rise, Diffusivity and Radius of Displacement were not accurate because values of porosity and potentiometric surface were not representative.
						New Comments
59 – New Comment	Various			Various		**Comment:** Powertech plans to conduct phased construction at the Dewey-Burdock project over several years and currently plans to begin operations solely at the Burdock portion of the site consistent with its initial financial assurance calculations provided to the NRC in 2015. Powertech estimates that a Class V well will be constructed at the Dewey portion of the site approximately four to seven years after the initial start of operations. Powertech will ask for the authorization to construct, provide the suitable data package and provide financial

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
						assurance guarantees for the well at Dewey once activities approach the Dewey portion of the site as provided for under Part III.J of the Revised Draft Class V Permit. The initial authorization and associated financial assurance should be for a single well at the Burdock portion of the site initially. The remaining three Class V wells are correctly included in the Revised Draft Class V Permit, but they should not be included in the initial financial assurance estimate. **Requested Change:** Powertech requests that the initial authorization and associated financial assurance estimate is for a single Class V well at the Burdock portion of the site. For each subsequent Class V well, Powertech will update the financial assurance estimate 90 days prior to the start of construction.
60 – New Comment			22	3.4	T	**Comment and Requested Change:** Sulfer is misspelled twice in the first paragraph. Request it be changed to sulfur.
61 – New Comment	20	III.C.2	43	7.3	I, A	**Comment:** The permit indicates any changes in well construction after initial well construction (draft permit) or after well construction is complete (draft fact sheet) will be considered major modifications, including the addition of perforations, according to 40 CFR 144.39 and 40 CFR 124.5. Powertech notes the use of the word "initial" or the phrase "after well construction is complete" are not found in the referenced regulations. Instead, the referenced regulations indicate changes in well construction may be approved by the Director as minor modifications "during construction." Powertech suggests this provides for minor modifications in well construction at times when construction consistent with approved plans is performed rather than being limited to an undefined "initial" period of construction or after reaching an undefined milestone where "well construction is complete." Perforating new intervals within the approved injection zone is a continuation of approved well construction. Perforating in the approved injection zone and other construction consistent with the approved plans should therefore be accepted as minor modifications of the permit. **Requested Change:** Powertech requests the following language be added to III.C.2 to allow for changes in well construction throughout the duration of well performance in accordance with the regulation: "The permittee has the flexibility to make changes in construction by means of a minor modification with the approval of the Director as long as the resulting Class V well construction is consistent with Federal UIC regulations and Part III of this Permit and so long as no change is made prior to approval by the Director. Allowable minor modifications

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
						include, but are not be limited to, adding perforations in the permitted injection zone and running a liner."
62 – New Comment	44-45	IX.B	60	11.2	A	**Comment and Requested Change:** Powertech requests clarification on the basis of a 1-mile avoidance buffer for the whooping crane, rufa red-knot and northern long-eared bat and how this was determined to be protective. Such a buffer appears to be much greater than typical wildlife buffers and was formulated without basis within the documents provided. From the documents provided, it appears that the buffer was arbitrarily increased from 1/4 mi to 1 mile by EPA and applied to other species arbitrarily. Powertech recommends that a mitigation plan be allowed to be developed upon observation of these species. Such a plan could involve various strategies to avoid a take.
63 – New Comment	44-45	IX.B.1	60	11.2	A	**Comment and Requested Change:** Powertech requests modification of the requirement that all operations and construction must cease within 1 mile upon sighting a whooping crane, rufa red-knot or northern long-eared bat. In particular, active operations cannot be immediately ceased as this could endanger protection of USDWs as operations are required to be manned. As well, this could create serious issues with compliance conditions within the Class III permit, for example, the need to continuously maintain a bleed on the wellfield. Powertech recommends that a mitigation plan be allowed to be developed upon observation of these species. Powertech questions the authority of the EPA to enforce such requirements. Such conditions are enforceable under the South Dakota DENR Large Scale Mine Permit, and Powertech believes these requirements are better applied in this fashion, with direct interaction with SD GFP, where trained wildlife biologists can determine an appropriate approach.
64 – New Comment	45	IX.B.5	61	11.2	A	**Comment and Requested Change:** This condition appears arbitrary and not tied to the known presence of wildlife of concern. Powertech suggests that this condition be modified so that if a whooping crane, rufa red-knot or northern long-eared bat have been confirmed at the site by trained wildlife biologist, then such a condition would be applied if deemed appropriate by a trained wildlife biologist.
65 – New Comment	44-45	IX.B	60	11.2	A	**Comment and Requested Change:** From the biological assessment documents provided, it does not appear that the EPA sought specific input on the parameters of mitigation for the whooping crane and rufa red-knot prior to creating permit requirements. Powertech requests clarification on the Section 7 consultation with the Secretary of the Interior (U.S. Fish and Wildlife Service). Are the

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error

Table 1. Draft Class V Area Permit Specific Comments and Recommended Permit Language Revisions (Cont.)

No.	Draft Permit		Fact Sheet		Type	Comment and Recommended Permit Language Revision or Other Modification
	Page	Section	Page	Section		
						mitigation measures described in the draft permit a result of this consultation? If not, Powertech requests that this section be revised once consultation has been completed.
66 – New Comment	45	IX.B.8	61	11.2	A	**Comment and Requested Change:** Powertech requests clarification on the frequency of the motion-activated camera monitoring. Powertech requests clarification that additional monitoring will not be required if the shaft entrance is covered following a determination that no bats are inside the shaft.

Comment type key: **A** – alternate approach proposed; **C** – correct to be consistent with application, regulations or NRC license requirements; **E** – additional explanation requested; **I** – inconsistency (internally inconsistent between parts of Draft permit or supporting documents); **R** – remove; inconsistent with application, regulations or NRC license requirements; **T** – typographical error